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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,440	08/01/2001	Yong-Woon Han	P56560PCT	1745

8439 7590 07/13/2004

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EXAMINER	
LEUNG, PHILIP H	

ART UNIT	PAPER NUMBER
3742	

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/890,440	HAN ET AL.
	Examiner	Art Unit
	Philip H Leung	3742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,13-18 and 20-26* is/are pending in the application.

4a) Of the above claim(s) *7 and 8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,9,14-16 and 21-24* is/are rejected.

7)☒ Claim(s) *6,10,11,13,17,18,20,25 and 26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4-6-2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. In view of the amendment filed on 4-6-2004, claims 1-6 and 9-26 are considered as readable on the elected species. Only claims 7 and 8 are withdrawn from consideration.

2. Upon reconsideration, the indication that claims 12 and 19 (now rewritten in independent form as claims 9 and 16, respectively), along with claims 14 and 15 which depend from claim 12 and claims 20 and 21 which depend from claim 19 in the previous Office action contain allowable subject matter is hereby rescinded. The indication was an error because these claims only combined the two features that were separately claimed in claim 1 and the original claims 9 and 16 and rejected under Low et al (US 5,276,300). Any inconveniences may cause the applicant by this action is sincerely regretted.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2, 4, 9 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Low et al (US 5,276,300) (previously cited by the applicant).

Low shows a DC 28 powered microwave oven having a driving circuit with an inverter 106, 216, a high voltage transformer 70, a magnetron 33 and a pulse driving unit (see Figures 5,

7 and 8). The pulse width modulator 242 in Figure 7 (see col. 6, lines 54-64) and the pulse generating circuits in the inverter 216 of Figure 8 (see col. 8, lines 7-20) are the claimed pulse driving unit. It also shows the use of an excessive current unit (370, 372, 374, 359, 360, 362, 366, etc.) for detecting a current supplied from the DC power supply to the inverter and outputting a signal to the pulse driving unit to at least reduce the pulse for the generation of the driving pulses for the operation of the microwave oven (see Figure 8, col. 8, lines 39-57). Although it does not explicitly state to cut off the generation of the driving pulses when the detected current corresponds to an excess current, it teaches to produce an output 356 from comparator 374 goes sharply negative and causes a pulse width reduction by way of comparator 359 (see Figure 8 and col. 8, lines 49-57). That is, this signal of reduced pulse width would be applied to the pulse generating circuits of the inverter 216 (or the pulse width modulator 242) which would also reduce the width of pulses to the FET switches 190 and 192 and therefore, decrease the magnetron output accordingly. It would have been obvious to an ordinary skill in the art to realize when the excessive current reaches an unsafe level, the pulse width of the output of comparator 359 will reduce to a minimum level such as zero and that would also cut off the drive pulse to the FET switches in order to protect the microwave heating system. In regard to claim 2, comparators 359, 366 and 374 are the claimed comparison part. In regard to claim 4, Low shows the use of FETS 190 and 192 as the inverter. In regard to claims 9 and 16, Low also shows the use of a switching unit and a switch monitor unit (68, 46, 48, 10, 122, etc.) for cutting off the supply when the door is open (see Figure 4 and col. 3, line 56 - col. 4, line 65).

5. Claims 3, 5, 14, 15 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Low et al (US 5,276,300), in view of Akazawa et al (US 5,237,140) (previously cited).

As set forth above, Low shows substantially every feature and structure as claimed except for the engineering design variation of the feedback control unit, such as the use of amplifier and transistor for the control signal. Akazawa shows a DC microwave oven with a battery and a sensing circuit to monitor the voltage of the battery to feedback control the operation of the microwave oven. The sensing circuit includes comparator 24 with a reference input, amplifier 23, diode 26 and transistor 25 for controlling the on-off of 53 of the inverter 3 for the microwave oven (see Figure 11 and col. 8, lines 18-59). It would have been obvious to an ordinary skill in the art to modify Low with a routine feedback circuit with amplification and a switching transistor for better control the operation of the microwave oven according to the sensed condition of the DC power supply, in view of the teaching of Akazawa.

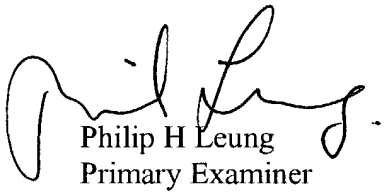
6. Claims 6, 10, 11,13, 17, 18, 20, 25 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Applicant's arguments with respect to claims 1-5, 9, 14-16 and 21-24 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip H Leung whose telephone number is (703) 308-1710.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on (703) 305-5766. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Philip H Leung
Primary Examiner
Art Unit 3742

P.Leung/pl
7-9-2004